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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF APPEALS AND INTERFERENCES

In re application of:	:	Examining Group: 2163
LŸrkens	:	Examiner: Vy, Hung T
Serial No.:10/500,507	:	Date: November 20, 2006
Filed: June 29, 2004	:	

For: Electronic Circuit, and Method of Operating a High Pressure Lamp

BRIEF ON APPEAL

Hon. Commissioner for Patents
Alexandria, Virginia 22313

SIR:

Enclosed is a Brief in support of an appeal from the final rejection of claims 1-14 in the Office Action dated June 29, 2006, in the above-identified application.

Fee _____

An oral hearing is waived.

Respectfully submitted,

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BRIEF ON APPEAL

I. Real Party in Interest

The real party in interest is Koninklijke Philips Electronics N.V.

II. Related Appeals and Interferences

None.

III. Status of Claims

Claims 1-14 stand rejected.

IV. Status of Amendments

All amendments have been entered.

V. Summary of Claimed Subject Matter

The invention relates to electronic ballasts for high pressure gas discharge lamps. In accordance with the invention, the lamp is coupled across the outputs of two

half bridge switching circuits that are operated independently; e.g. as illustrated in appellant's FIG. 4.

The following table relates the appealed claims to the specification as originally filed (published PCT application WO 03/056886 A1). The table is not exhaustive of all possible cross-references. Claim 12 is the only independent claim.

1. The electronic circuit as set forth in claim 12 wherein the first filter includes a first coil coupled to the output of the first half bridge and the resonant circuit includes a second coil coupled to the output of the second half bridge; characterized by	FIG. 1, coil L1 and output 112-1 coil L2 and capacitor C2
a first capacitor coupled between the first coil and either the reference potential (-) or the operating potential (+); and	FIG. 1, C3 or C4
a second capacitor coupled between the second coil and either the reference potential (-) or the operating potential (+) or in parallel to the high-pressure lamp (120).	FIG. 6, C5 or C6
2. A circuit as claimed in claim 1, characterized in that a third capacitor (C3) is connected between the output (112-1) of the first half bridge (110-1) and either the operating potential (+) or the reference potential (-).	claim contains reference numbers
3. A circuit as claimed in claim 1, characterized in that a third capacitor (C3) is connected between the output (112-1) of the first half bridge (110-1) and the reference potential (-), and in that a fourth capacitor (C4) is	claim contains reference numbers

connected between the operating potential (+) and the output (112-1) of the first half bridge (110-1).	
4. A circuit as claimed in claim 1, characterized in that a fifth capacitor (C5) is connected between the output of the second half bridge (112-2) and the operating potential (+), and/or in that a sixth capacitor (C6) is connected between the reference potential (-) and the output (112-2) of the second half bridge (110-2).	claim contains reference numbers
5. A circuit as claimed in claim 1, wherein said second means includes: a sensor device (130) for generating a current-sensor signal which represents the value of the current through the first coil (L1); and	claim contains reference numbers
a comparator device (140) for comparing the value represented by the current-sensor signal with a given reference current value I_R and for generating at least one control signal for controlling the level of the current through the first coil (L1) and through the high-pressure lamp (120) to the given reference current value I_R through a suitable variation of the duty cycles of the switching elements (T1, T2) of the first half bridge (110-1).	claim contains reference numbers
6. A circuit as claimed in claim 5, characterized in that the sensor device (130) includes a magnetoresistive sensor.	claim contains reference numbers
7. A circuit as claimed in claim 5, characterized by a delay device (150) for delaying the control signal for controlling the switching elements (T1, T2)	claim contains reference numbers

of the first half bridge (110-1) by a given delay time with respect to the moment when it is detected that the level exceeds the reference value I_R in upward or downward direction, which delay time is defined such that at least a desired critical damping establishes itself in the filter formed by the second coil (L2) and the first capacitor (C1), and that the current through the first coil (L1) changes its sign at least twice during a switching cycle of the switching elements (T1, T2) of the first half bridge.	
8. A method of operating a high-pressure lamp (120) with a circuit as claimed in claim 12, and further including the step of: operating the second half bridge at a frequency corresponding to the resonant frequency of the resonant circuit or to an odd fraction thereof, so as to generate an ignition voltage necessary for igniting the high-pressure lamp (120).	claim contains reference numbers
9. A method as claimed in claim 8, characterized in that the step of operating the second half bridge is maintained for at least one second, and, after that, a switch is made to another operational mode.	claim contains reference numbers
10. A method as claimed in claim 9, further including the step of: reducing the switching frequency of the second half bridge (110-2), and thus the frequency of the current through the high-pressure lamp	claim contains reference numbers

(120), after ignition of the high-pressure lamp .	
11. A method as claimed in claim 8, further including the step of: operating the switching elements (T1, T2, T3, T4) of the first half bridge (110-1) and/or the second half bridge (110-2) in accordance with the principle of voltageless switching.	claim contains reference numbers
12. In electronic circuit for operating a high-pressure lamp in at least two modes, a first half bridge (T1, T2) and a second half bridge (T3, T4) connected in parallel between an operating potential (+) and a reference potential (-), a filter (L1, C1) coupled to the output of the first half bridge circuit, a resonant circuit (L2, C2) coupled to the output of the second half bridge circuit, wherein the lamp (120) can be coupled between the filter and the resonant circuit, and a first means for operating the second half bridge, the improvement comprising:	FIG. 1; page 4, lines 24-33; page 5, lines 1-15; page 6, line 10 - page 11, line 3; reference numbers added
second means (140, 150) for operating the first half bridge, whereby the first half bridge and the second half bridge operate independently of each other.	FIG. 1, FIG. 4 page 9, lines 8-23
13. The electronic circuit as set forth in claim 12 wherein said first half bridge includes two switches connected in series, wherein a first switch conducts and a second switch is non-conducting at zero current from the output of the first half bridge during a first mode of operation.	page 7, lines 10-15

14. The electronic circuit as set forth in claim 12 wherein said means operates the first half bridge at a higher frequency than the operating frequency of the second half bridge during a second mode of operation.	page 9, lines 15-17

VI. Grounds of Rejection for Review on Appeal

A. Are claims 1 and 8-14 unpatentable over Nilssen (4,949,015) in view of Jungreis et al. (6,535,403)?

B. Are claims 2, 3, and 4 unpatentable over Nilssen (4,949,015) in view of Jungreis et al. (6,535,403) and Haas et al. (5,712,536)?

C. Are claims 5 and 7 unpatentable over Nilssen (4,949,015) in view of Jungreis et al. (6,535,403) and Pogadaev et al. (6,369,526)?

D. Is claim 6 unpatentable over Nilssen (4,949,015) in view of Jungreis et al. (6,535,403), Pogadaev et al. (6,369,526), and Black, Jr. et al. (5,831,426)?

VII. Argument

Claims 1 and 8-14 stand rejected as unpatentable over Nilssen in view of Jungreis et al.

Concerning the Nilssen patent, the Examiner asserts the following.

> With respect to claim 12, Nilssen discloses in electronic circuit for operating a high-pressure lamp in at least two modes, a first half bridge (Qa1, Qa2) and a second bridge (Q1b, Qb2) connected in parallel and the improvement comprising: second means for operating the first half bridge, whereby the first half bridge and the second half bridge

> operate independently of each other [emphasis added].

It is respectfully submitted that there is no support in the Nilssen patent for the italicized assertion. The Examiner refers to column 4, lines 61-68, reproduced in part below.

> "The full-bridge inverter of fig. 1 actually consists or two half-bridge inverters, either of which can be made to operate independently of the other, as long as the other is maintained in a non-operative state. [emphasis added]

(1) It is respectfully submitted that "as long as the other is maintained in a non-operative state" is the antithesis of "independent" operation and no amount of verbal gymnastics can make it otherwise; see definition 3. of "independent" given below. It is respectfully submitted that the sentence does not support the Examiner's interpretation.

(2) An inoperative state, by definition, is not operative and, therefore, not part of independent operation. How can non-operation be operation? The Examiner's interpretation is contrary to the ordinary meaning of the words. One does not consider "off" or "non-operating" as "on" or "operating." Given the Examiner's interpretation of "operate," a simple request to turn the lights off in a room becomes meaningless. Does a lamp that burns out thereafter "operate independently" of others on a common branch? An ordinary person would think not. It is respectfully submitted that one of ordinary skill in the art would certainly think not.

(3) The American Heritage Dictionary defines "independent" as follows.

independent adjective.

1. Politically autonomous; self-governing.
2. Free from the influence, guidance, or control of another or others; self-reliant: an independent mind.
3. Not determined or influenced by someone or something else; not contingent: an independent study of air pollution.
4. Affiliated with or loyal to no one political party or organization: an independent voter.
5. Not dependent on or affiliated with a larger or controlling group or system: an independent food store.

The use of the term "independent" in the Nilssen patent is not descriptive of what is actually taking place and is not a use of the term in its ordinary and accepted meaning.

(4) Whether or not "independently" has a special meaning in the Nilssen patent, it is used in its ordinary and accepted meaning in appellant's description and claims and the Examiner is bound to so interpret the claims.

(5) Appellant is not bound by the inarticulateness of the Nilssen patent. The Examiner is forcing a meaning on appellant's claims that is not there. It is respectfully submitted that such analysis is backwards.

(6) Patent specifications are addressed to one of ordinary skill in the art. Although patent examiners are not ones of ordinary skill in the art, "Office personnel must always remember to use the perspective of one of ordinary skill in the art. Claims and disclosures are not to be evaluated in a vacuum" MPEP ¤2106. It is respectfully submitted that the Examiner's

interpretation of the claims is plainly contrary to the requirements of MPEP ¤2106.

(7)As explained in column 4, lines 1-20, of the Nilssen patent inverter (Qa1 and Qa2) oscillates first and then inverter (Qb1 and Qb2) is triggered. Once triggered, the inverters are locked in a feedback loop. "[T]ransistor-pair Qb1/Qb2 starts to get involved in the positive feedback cycle and thereby in the inverter action." Getting "involved" is not independent operation.

(8)If one does not operate transistors Qb1 and Qb2, then one has a single half-bridge circuit, not two half-bridges operating independently. The Examiner's interpretation that having one half-bridge not operating is independent "operation" is simply not supported by the language of the Nilssen patent, such as it is.

(9)If one does not trigger inverter (Qb1 and Qb2), then one must switch output terminals; viz. use terminals JC and JXa instead of JXa and JXb when using two half-bridges [column 5, lines 4-15]. This is not independent operation.

(10) The Examiner asserts that "The claims do not require two half-bndge [sic] have to operative [sic] at the same time." Claim 12 says "whereby the first half bridge and the second half bridge operate" [emphasis added]. The claim clearly recites two half bridges operating.

(11) The adverbial phrase "independently of each other" modifies "operating" but does not contradict it. The phrase does not turn "operating" into "not operating" as the Examiner alleges. Such a distorted

meaning is simply not there. The grammar is contrary to the Examiner's interpretation.

(12) The claims differ from the prior art as "and" differs from "or." The Nilssen patent alleges that one half bridge can operate alone if the other half bridge is rendered inoperative. How is not disclosed. The sentence is mere speculation. The base drive circuit is a series circuit across the ac diagonal of the bridge. Saturable core drives are well known as temperamental. One cannot just cut out elements and expect that the circuit will work. Assuming that it can be done, one and only one half bridge can operate at a time as alleged in the Nilssen patent. This is "or" not "and" as recited in appellant's claim 12.

(13) The Jungreis et al. patent discloses in column 2, lines 49-51, that the half bridges are operated 180¡ out of phase, which is not independent operation. Clearly there is no basis for the combination; In re Rouffet, 47 USPQ2d 1453, at 1457 (Fed. Cir. 1998). What is the basis for picking one part of the disclosure from the Jungreis et al. patent and ignoring the requirement for operating 180¡ out of phase (i.e. not independently)?

(14) The Nilssen patent discloses a fluorescent lamp. The Jungreis et al. patent discloses an HID lamp. What is the basis for the combination? Does one having "a fluorescent lamp having thermionic cathodes that need to be pre-heated before the lamp is properly ready to be ignited" [Nilssen, column 1, lines 8-10] look to the HID art for a ballast? Clearly there is no basis for the combination; In re Rouffet.

Concerning the Jungreis et al. patent, the Examiner then asserts that the patent discloses a filter coupled to the first half bridge circuit and a resonant circuit coupled to the output of the second half bridge circuit.

(1) The Jungreis et al. patent overcomes none of the foregoing difficulties in the disclosure of the Nilssen patent and introduces several more of its own.

(2) The Jungreis et al. patent does not use the word "resonant." What is the basis for the Examiner's allegation that it discloses a resonant circuit?

(3) The Jungreis et al. patent is concerned with an inductor having a value related to the pulse width modulation of the current. See equations (1) and (2) in column 4 of the Jungreis et al. patent. It is respectfully submitted that this teaches away from a resonant circuit.

(4) Appellant discloses at page 1, lines 21-25 of the specification.

> "The first coil 1 and the capacitor 2 are to be dimensioned for the normal operational mode such that they act as a filter for filtering out the AC component from the lamp current. They are definitely not operated in a resonant mode during this, i.e. the switching frequencies of the two transistors 12 and 13 are substantially higher than the resonance frequency of a resonant circuit formed by the first coil 1 and the capacitor 2" [emphasis added].

In other words, appellant distinguishes between "resonant circuit" and "filter."

The Examiner asserts the following (page 7 of final Office Action).

> "Jungreis et al. discloses the resonant circuit as Li, Cl and L2, C2. A circuit that contains inductance, capacitance, and resistance of such values as to give resonance at an operating frequency based the definition of "resonant circuir (MC Graw-Hill Encyclopedia of Science & Technology online)."

In other words, the Examiner is re-writing the claims to recite two resonant circuits when two resonant circuits are not recited. Re-writing a claim to support a rejection is not proper examination.

Claims 2, 3, and 4 stand rejected as unpatentable over Nilssen (4,949,015) in view of Jungreis et al. (6,535,403) and Haas et al. (5,712,536).

(1) Claims 2, 3, and 4 distinguish over the prior art for the same reasons as parent claim 1. The patent to Haas et al. overcomes none of the difficulties described above with the disclosures of the Nilssen and the Jungreis et al. patents.

(2) The Haas et al. patent discloses a single half bridge, not two half bridges operating independently.

(3) The Examiner asserts the following with respect to the Haas et al. patent.

> "Haas et al. discloses the third capacitor C_{S2} and fourth capacitor C_{S1} is connected between the output of the half bridge S_1, S_2 and either operating potential (+) or reference potential (-) (See fig. 3). It would have been obvious at the time the invention was made to

> a person having ordinary skill in the art to modify Jungreis et al. and Nilssen to have the third capacitor as taught by Haas et al. The motivation for doing so would have been to provide third capacitor and fourth capacitor is connected between the output of the half bridge and either operating potential (+) or reference potential (-) in order to have constitutes the voltage on boost third capacitor."

The last sentence is completely ungrammatical and is not understood.

(4) The third capacitor (claim 2) relates to timing; see paragraph bridging pages 9 and 10 of appellant's published PCT application. The mention of "boost" in the Examiner's rationale makes no sense because "boost" is not used in claims 2, 3, or 4 (or anywhere else in appellant's specification).

(5) The third capacitor and fourth capacitor (claim 3) are for timing.

(6) The fifth capacitor and six capacitor (claim 4) are not discussed in the Examiner's remarks — or disclosed or suggested by the Haas et al. patent.

(7) There is no apparent basis for the combination of prior art proposed by the Examiner, other than appellant's claims, which is improper; In re Rouffet.

Claims 5 and 7 stand rejected as unpatentable over Nilssen (4,949,015) in view of Jungreis et al. (6,535,403) and Pogadaev et al. (6,369,526).

(1) Claims 5 and 7 distinguish over the prior art for the same reasons as parent claim 1. The patent to

Pogadaev et al. overcomes none of the difficulties described above with the disclosures of the Nilssen patent and the Jungreis et al. patent.

(2)The Pogadaev et al. patent discloses a ballast that is inoperative on its face. In figures 1, 2, 3, and 9, the junction of transistor PS_1 and transistor PS_2 is clearly not connected to anything. As such the circuit is inoperative. A patent disclosing an inoperative circuit cannot teach.

(3)With respect to claim 7, the Examiner alleges that the Pogadaev et al. patent discloses a delay at column 2, lines 47-50. The text reads as follows.

> "generating pulses of frequency f_1 for a duration of time t_1 being equal to $n¤f_1$, where n is a positive number, and f_1 equals the resonance frequency of the ballast's lc series circuit;"

Apparently, generating pulses for a period teaches "delaying the control signal for controlling the switching elements É" as recited in claim 7. Appellant respectfully disagrees.

(4)The Pogadaev et al. patent does not use the word "delay."

(5)Even if the Pogadaev et al. patent were somehow relevant, there is no basis for the combination of prior art proposed by the Examiner; In re Rouffet.

Claim 6 stands rejected as unpatentable over Nilssen (4,949,015) in view of Jungreis et al. (6,535,403), Pogadaev et al. (6,369,526), and Black, Jr. et al. (5,831,426).

(1)Claim 6 distinguishes over the prior art for the same reasons as parent claim 5. The patent to Black, Jr., et al. overcomes none of the difficulties described above with the disclosures of the Nilssen patent, Jungreis et al., and Pogadaev et al. patents.

(2) There is no basis for the combination of prior art proposed by the Examiner; In re Rouffet.

Summary

It is respectfully submitted that the rejections of claims 1-14 are based upon a misreading of the disclosure of the Nilssen patent and a combination of other prior art without any basis other than the claims themselves. The secondary patents relied on are, at best, irrelevant, and, in one case, describe inoperative devices.

Conclusion

In view of the foregoing, it is respectfully submitted that the rejection of claims 1-14 is in error and should be reversed.

Respectfully submitted,

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VII. Claims Appendix

1. The electronic circuit as set forth in claim 12 wherein the first filter includes a first coil coupled to the output of the first half bridge and the resonant circuit includes a second coil coupled to the output of the second half bridge; characterized by

a first capacitor coupled between the first coil and either the reference potential (–) or the operating potential (+); and

a second capacitor coupled between the second coil and either the reference potential (–) or the operating potential (+) or in parallel to the high-pressure lamp (120).

2. A circuit as claimed in claim 1, characterized in that a third capacitor (C3) is connected between the output (112–1) of the first half bridge (110–1) and either the operating potential (+) or the reference potential (–).

3. A circuit as claimed in claim 1, characterized in that a third capacitor (C3) is connected between the output (112–1) of the first half bridge (110–1) and the reference potential (–), and in that a fourth capacitor (C4) is connected between the operating potential (+) and the output (112–1) of the first half bridge (110–1).

4. A circuit as claimed in claim 1, characterized in that a fifth capacitor (C5) is connected between the output of the second half bridge (112–2) and the operating potential (+), and/or in that a sixth

capacitor (C6) is connected between the reference potential (-) and the output (112-2) of the second half bridge (110-2).

5. A circuit as claimed in claim 1, wherein said second means includes:

a sensor device (130) for generating a current-sensor signal which represents the value of the current through the first coil (L1); and

a comparator device (140) for comparing the value represented by the current-sensor signal with a given reference current value I_R and for generating at least one control signal for controlling the level of the current through the first coil (L1) and through the high-pressure lamp (120) to the given reference current value I_R through a suitable variation of the duty cycles of the switching elements (T1, T2) of the first half bridge (110-1).

6. A circuit as claimed in claim 5, characterized in that the sensor device (130) includes a magnetoresistive sensor.

7. A circuit as claimed in claim 5, characterized by a delay device (150) for delaying the control signal for controlling the switching elements (T1, T2) of the first half bridge (110-1) by a given delay time with respect to the moment when it is detected that the level exceeds the reference value I_R in upward or downward direction, which delay time is defined such that at least a desired critical damping establishes itself in the filter formed by the second coil (L2) and the first capacitor (C1),

and that the current through the first coil (L1) changes its sign at least twice during a switching cycle of the switching elements (T1, T2) of the first half bridge.

8. A method of operating a high-pressure lamp (120) with a circuit as claimed in claim 12, and further including the step of:

operating the second half bridge at a frequency corresponding to the resonant frequency of the resonant circuit or to an odd fraction thereof, so as to generate an ignition voltage necessary for igniting the high-pressure lamp (120).

9. A method as claimed in claim 8, characterized in that

the step of operating the second half bridge is maintained for at least one second, and, after that, a switch is made to another operational mode.

10. A method as claimed in claim 9, further including the step of:

reducing the switching frequency of the second half bridge (110-2), and thus the frequency of the current through the high-pressure lamp (120), after ignition of the high-pressure lamp .

11. A method as claimed in claim 8, further including the step of:

operating the switching elements (T1, T2, T3, T4) of the first half bridge (110-1) and/or the second half bridge (110-2) in accordance with the principle of voltageless switching.

12. In electronic circuit for operating a high-pressure lamp in at least two modes, a first half bridge and a second half bridge connected in parallel between an operating potential and a reference potential, a filter coupled to the output of the first half bridge circuit, a resonant circuit coupled to the output of the second half bridge circuit, wherein the lamp can be coupled between the filter and the resonant circuit, and a first means for operating the second half bridge, the improvement comprising:

second means for operating the first half bridge, whereby the first half bridge and the second half bridge operate independently of each other.

13. The electronic circuit as set forth in claim 12 wherein said first half bridge includes two switches connected in series, wherein a first switch conducts and a second switch is non-conducting at zero current from the output of the first half bridge during a first mode of operation.

14. The electronic circuit as set forth in claim 12 wherein said means operates the first half bridge at a higher frequency than the operating frequency of the second half bridge during a second mode of operation.

IX. Evidence Appendix

There were no affidavits filed in this application.

X. Related Proceedings Appendix

There are no related procedings.